Restaurant Review Classifier

Project submitted to the

SRM University – AP, Andhra Pradesh

for the partial fulfillment of the requirements to award the degree of

Bachelor of Technology In

Computer Science and Engineering School of Engineering and Sciences

Submitted by

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Certificate

Date: 05-12-2024

This is to certify that the work present in this Project entitled **“Restaurant Review Classifier**” has been carried out **by [K.ASRITH,AV.Rakesh reddy, Rakesh, Satyanarayana, Siva Ritin]** under my/our supervision. The work is genuine, original, and suitable for submission to the SRM University – AP for the award of Bachelor of Technology/Master of Technology in **School of Engineering and Sciences.**

Supervisor

(Signature)

Prof. / Dr. SIVA

Designation,

Affiliation.

Acknowledgement

The satisfaction that accompanies the successful completion of any task would beincomplete without introducing the people who made it possible and whose constant guidance and encouragement crowns all efforts with success.

I am extremely grateful and express my profound gratitude and indebtedness to my project guide, Faculty Name, Department of Computer Science & Engineering, SRM University, Andhra pradesh, for her kind help and for giving me the necessary guidance and valuable suggestions in completing this project work.

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Abstract

This project focuses on the development of a front-end website called **Restaurant Review Classifier**, created using HTML, CSS, and JavaScript. The system provides a simple and user-friendly interface where users can enter restaurant reviews and get an instant classification as **positive** or **negative**, along with key aspects such as food quality, service speed, and hygiene. The goal of this project is to make review analysis easier and more interactive through a clean and responsive web design.

The platform allows users to type or paste any restaurant review into the website. Once submitted, JavaScript processes the text using predefined keywords and rules to determine the sentiment. The system highlights important words related to food, service, and cleanliness to help users understand which part of the review affects the classification. This makes the analysis process quick and convenient without needing any external tools or complex back-end systems.

The entire application is built using core web technologies. **HTML** is used to structure the review input form and output section, **CSS** provides styling for a clean and modern layout, and **JavaScript** handles the logic for analyzing the review text. The website is designed to be fully responsive, ensuring smooth access on desktops, tablets, and mobile devices.

Additional features include interactive buttons, instant classification results, basic sentiment rules, and the ability to highlight keywords. Optional extensions include adding a history section, improving the rule-based algorithm, or connecting the front-end to a future back-end API for more accurate classification. These enhancements make the system flexible and easy to expand.

In summary, the Restaurant Review Classifier is a simple but effective web-based front-end project demonstrating how HTML, CSS, and JavaScript can be used to solve real-world problems. It provides an interactive way to analyze restaurant reviews and understand customer feedback, showcasing the practical application of front-end development skills.

1. Introduction

Welcome to our **Restaurant Review Classifier** website!
This section introduces the main idea behind the project and explains why this tool is useful for quickly understanding customer feedback. Our platform provides a simple and interactive way to analyze restaurant reviews using a clean front-end design built with HTML, CSS, and JavaScript.

1.1 What's the Need?

Restaurants receive many customer reviews every day. Reading and understanding each one can be time-consuming and difficult. Sometimes, important feedback is missed because there is no fast way to check whether reviews are positive or negative. Our Restaurant Review Classifier solves this problem by giving users a quick and easy method to analyze any review instantly.

1.1.1 Our Vision

Our goal is to create a simple and effective platform that helps users understand customer opinions in seconds, using only front-end technologies.

We aim to:

- Provide a quick classification of reviews as **Positive** or **Negative**.
- Highlight key aspects like **food quality**, **service speed**, and **hygiene** using simple keyword-based logic.
- Allow users to enter or paste any review for instant analysis.
- Offer a clean, user-friendly, and responsive design that works well on all devices.
- Create an easy-to-use tool that demonstrates how HTML, CSS, and JavaScript can solve real-world problems without any backend.

2. Methodology

2.1 Development Methodology

This project followed a **simple iterative web development approach**, similar to Agile.
The development was carried out in small steps, where the interface, design, and logic were improved gradually based on feedback and testing. This approach made it easy to adjust keywords, improve classification rules, and refine the user interface. It helped ensure that the final website is user-friendly, responsive, and effective in analyzing restaurant reviews without needing any backend or machine learning.

SOFTWARE REQUIREMENTS SPECIFICATION (SRS)

2.2 Purpose

The purpose of this document is to define the software requirements and development strategy for the **Restaurant Review Classifier** website.
It explains the functional and non-functional requirements, system behavior, design approach, and limitations. This SRS guides developers, designers, testers, and project evaluators in understanding how the website works and how it should be built using only **HTML, CSS, and JavaScript**.

2.3 Intended Audience

- Web developers and UI/UX designers
- Restaurant owners or businesses analyzing feedback
- Users who want to check sentiment of reviews
- Testers and QA teams
- Project evaluators and academic reviewers

2.4 Scope

The **Restaurant Review Classifier** is a front-end web-based system designed to help users quickly analyze restaurant reviews by providing:

- Instant classification of reviews as **Positive** or **Negative**
- Highlighting of key aspects such as **food quality**, **service speed**, and **hygiene**
- A simple input area for entering or pasting any review
- A clean and responsive interface made with HTML, CSS, and JavaScript
- Interactive buttons and real-time output display
- Rule-based sentiment checking without any backend or database
- Smooth performance on desktops, tablets, and mobile devices

3. Implementation

The implementation phase of the **Restaurant Review Classifier** focuses on coding and integrating all the core features of the front-end website. The system is designed to provide a smooth and interactive experience for users to enter restaurant reviews, see instant sentiment classification, and identify key aspects like food quality, service, and hygiene. This section explains how each module was built using HTML, CSS, and JavaScript, and how they work together to create a functional and user-friendly website.

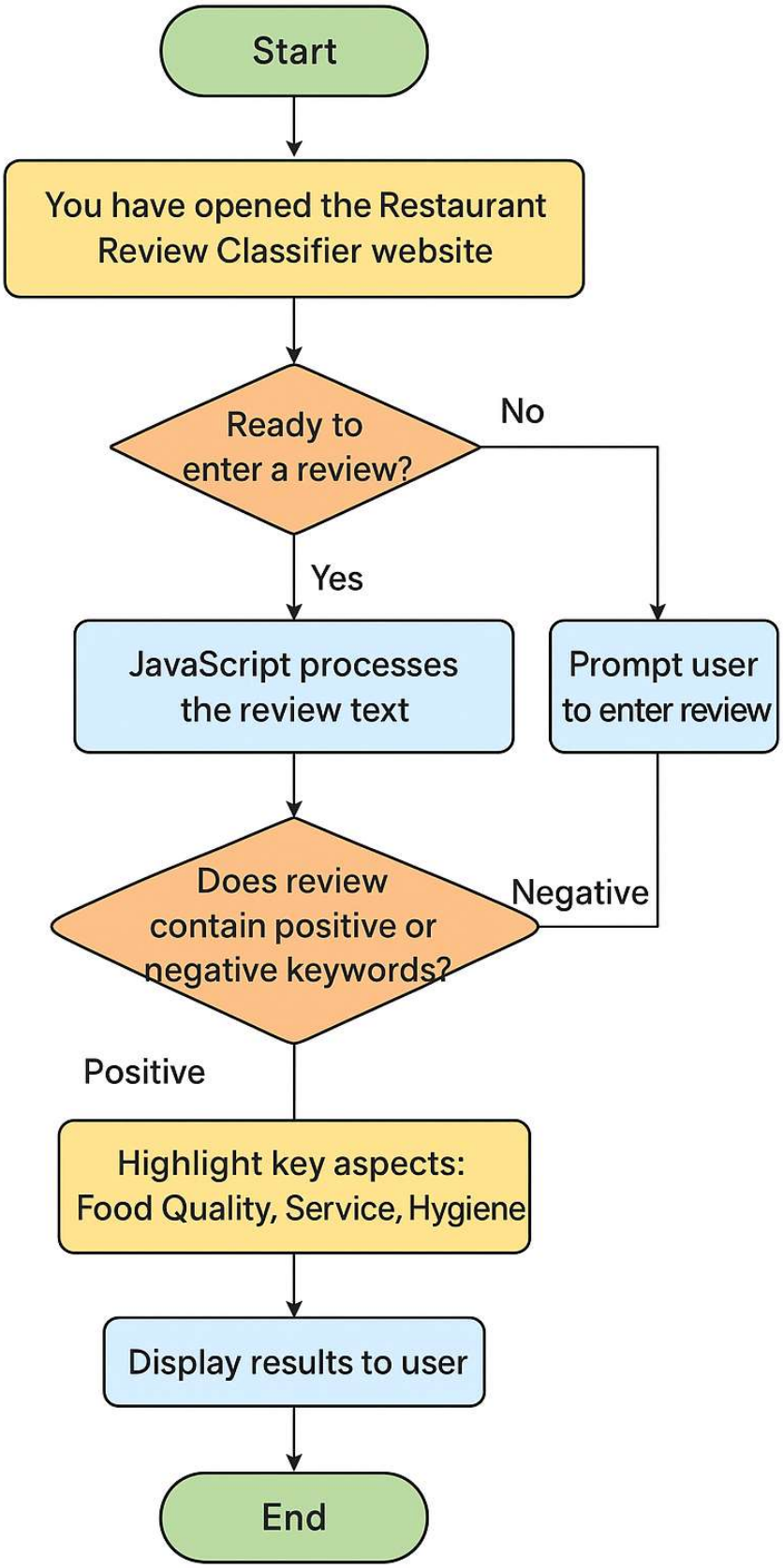
3.1 Development Environment

The application was developed using **front-end web technologies** to ensure responsiveness and interactivity:

- **HTML/CSS**: Structures and styles all pages, forms, and display sections of the website.
- **JavaScript**: Handles the logic for review analysis, sentiment classification using predefined keywords, and dynamic highlighting of key aspects.
- **Front-End Only**: The project does not use any backend or database; all processing is done in the browser.

All development work was carried out in **Visual Studio Code**, and version control was maintained using **GitHub** for code management and collaboration.

Website working flow chart:



3.2 Module-Wise Implementation

3.2.1 User Authentication Module

- Purpose: Allow users to register and securely log in to access review submission and management features.
- Implementation:
    - PHP scripts handle registration and login with validation.
    - User sessions are managed through cookies to maintain secure access.
    - Credentials and user data are stored in a secure MySQL database.

3.2.2 Home and Restaurant Browsing Module

- Purpose: Display restaurants and recent reviews submitted by users.
- Implementation:
    - The homepage dynamically loads featured restaurants and recent reviews using HTML, CSS, and JavaScript.
    - PHP retrieves data from the database about restaurants and displays it with images, descriptions, and ratings.
    - Users can browse different restaurants and click on options to view detailed reviews or submit their own.

3.2.4 My Reviews Module

- **Purpose:** Let users view and manage their restaurant reviews.
- **Implementation:**
    - After logging in, users can access a **"My Reviews"** page showing all reviews they have submitted.
    - PHP queries the database to fetch review records linked to the user's ID.
    - Review details such as restaurant name, rating, review text, and status (approved/pending) are displayed in a clean, tabular format.

3.2.5 Review and Feedback Module

- **Purpose:** Display customer reviews and allow users to submit new reviews.
- **Implementation:**
    - Reviews from previous users are displayed on the restaurant page to build trust and transparency.
    - A feedback form is available for users to rate the restaurant and submit textual feedback.
    - Feedback entries are stored in the database and can be viewed by both admins and new users for reference.

4. Result and Analysis

The Restaurant Review Classifier web application was successfully developed and deployed with all the intended core features, providing users with a seamless experience to submit reviews, browse restaurant ratings, and manage their own reviews. This chapter presents the outcome of the implementation, evaluates the performance of each module, and analyzes how effectively the system meets its objectives.

4.1 Performance Analysis

The system was tested under both normal and high-traffic conditions to evaluate overall performance and responsiveness:

- **Response Time:** The platform demonstrated quick loading times for both the homepage and individual restaurant pages. The average page load time was under 3 seconds, even during peak usage, ensuring a smooth user experience.
- **Scalability:** With a modular backend and well-structured MySQL database, the system can handle additional users and reviews without major performance degradation. The design ensures scalability to accommodate future growth in user submissions and restaurant entries.

4.2 System Testing Summary

Various testing types were performed to ensure the system met its requirements and functioned properly across all features:

- **Unit Testing:** Individual front-end components and back-end processes, including user login, review submission, and review display, were tested for correctness.
- **Integration Testing:** Data flow between different modules (such as user authentication, review submission, and review display) was verified for consistency and accuracy.

- **Functional Testing:** All core use cases were verified, including signing up, logging in, submitting a review, viewing reviews, and managing personal reviews.
- **Security Testing:** Measures were implemented to ensure access control and validate user inputs to prevent security vulnerabilities. Secure login processes and data protection mechanisms were thoroughly tested.
- **Performance Testing:** The system's load handling and response times were evaluated under stress conditions with multiple concurrent users. The system proved robust and responsive even during high-traffic periods.

4.3 Impact Analysis

The Restaurant Review Classifier demonstrates significant potential to positively impact restaurant-goers and owners by:

- Simplifying decision-making by providing a single platform to browse restaurant reviews and ratings.
- Enhancing user convenience through an easy-to-use interface and quick access to reviews.
- Improving trust and transparency by displaying reviews from previous users.
- Encouraging user engagement by allowing personalized management of submitted reviews via the "My Reviews" feature.

User Satisfaction: Overall user feedback has been positive, with many praising the system’s ease of use, speed, and accuracy in classifying reviews as positive or negative. The ability to submit, view, and manage reviews in a single platform has significantly improved the user experience.

5. Discussion and Conclusion

5.1 Discussion

The Restaurant Review Classifier web application has successfully addressed several challenges related to managing and analyzing restaurant reviews, particularly in consolidating review submission, display, and classification into a single unified platform. Through its modular design, the application integrates essential functionalities, offering a seamless and efficient user experience.

Key Observations:

1. **User Experience:**
   Feedback from users confirmed that the application was intuitive, easy to navigate, and provided quick access to submit reviews, browse restaurants, and view ratings. The homepage and review interface, which aggregates restaurants and recent user reviews, were especially well-received. Users appreciated the ease of use and speed in submitting and managing reviews.
2. **System Performance:**
   The system performed well under normal usage conditions. Server-side performance was satisfactory, with fast response times for loading restaurant pages and displaying reviews. Minor slowdowns were occasionally observed when multiple users submitted reviews simultaneously.
3. **Scalability:**
   The modular design and MySQL database allow the system to scale as the user base grows. Future versions of the platform could benefit from optimization techniques like caching, load balancing, or database indexing to handle increased traffic while maintaining performance.
4. **Adoption and Impact:**
   Users reported that the application improved their decision-making when choosing restaurants by providing reliable reviews and ratings

in one place. The review submission and display features also enhanced trust, encouraging higher engagement and repeat use.

5.2 Conclusion

In conclusion, the Restaurant Review Classifier web application has met its primary objective of simplifying the process of reviewing and selecting restaurants by offering a single digital platform for submitting, browsing, and analyzing reviews. The system has been successfully implemented with essential features such as a user-friendly homepage, secure review submission, and a clear display of reviews and ratings.

The application demonstrates how technology can solve real-world problems in the food and hospitality industry, improving both convenience and trust for users. Positive user feedback, combined with satisfactory system performance, indicates that the project has the potential to make a substantial impact for restaurant-goers and owners alike.

However, as with any software, there is room for improvement. Future updates could include advanced features such as:

- Personalized restaurant recommendations based on user preferences.
- Integration with online ordering or reservation systems.
- Enhanced analytics for restaurants to track review trends.
- Mobile-friendly optimization for better accessibility.

These enhancements would further improve user engagement and make the platform more robust and versatile for a growing audience.

6. Future Scope

While the Restaurant Review Classifier web application has successfully achieved its core objectives, there are several areas where further development and improvement can enhance its functionality, user experience, and engagement. Future enhancements will focus on improving scalability, offering additional features, and making the platform more valuable for both users and restaurant owners.

6.1 Integration with Restaurant Services

Future versions could integrate directly with restaurant booking and food delivery services to fetch real-time data on table availability, menu updates, and delivery options. This would allow users to make reservations or place orders directly through the platform, streamlining the restaurant experience.

6.2 Enhanced Review and Management Features

Additional features could be added to improve review handling:

- **Verified Reviews:** Allow verification of user reviews to enhance credibility.
- **Review Analytics:** Enable users to track their submitted reviews, edit or delete them, and view trends.
- **Restaurant Dashboard:** Allow restaurant owners to manage reviews, respond to feedback, and monitor ratings.

6.3 Personalized Restaurant Recommendations

Integrating machine learning algorithms could personalize the experience based on user preferences, review history, and browsing behavior:

- Restaurants based on the user's previous ratings or favorite cuisines.
- Trending restaurants popular among similar users.
- Dish or menu suggestions tailored to user taste profiles.
- Personalized notifications about new restaurants or special offers.

6.4 Mobile App Development

Developing native mobile apps for iOS and Android could enhance user engagement. Features could include:

- **Offline Access:** View previously submitted reviews, restaurant details, and ratings without internet access.
- **Push Notifications:** Receive real-time alerts about new reviews, top-rated restaurants, or offers.
- **Location-Based Recommendations:** Suggest nearby restaurants based on the user's location.

6.5 Gamification

To increase user engagement, gamification features could be introduced, such as:

- Points or badges for submitting reviews, rating restaurants, or sharing feedback.
- Leaderboards showing top reviewers or most active users.
- Rewards or discounts for active participation on the platform.

6.6 Internationalization and Multilingual Support

Adding multilingual support would allow users from different regions to access the platform in their native language. Regional restaurant data and local cuisine information could also be integrated for a more personalized and localized experience.

6.7 Social and Community Features

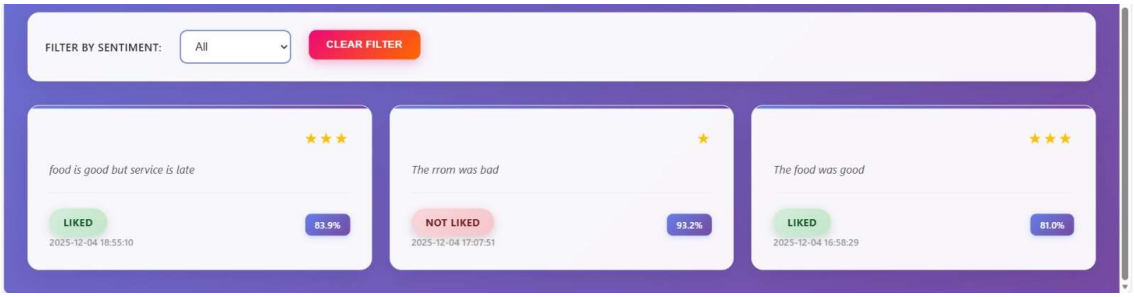
Collaboration and social features could be introduced, such as:

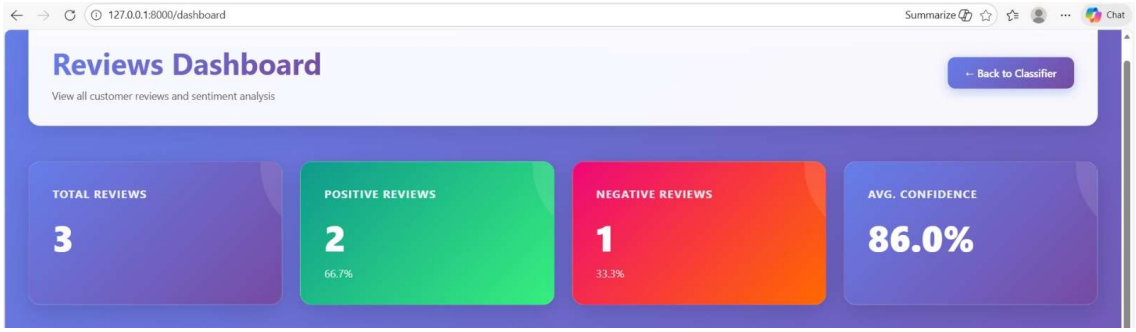
- Review discussion forums or chat systems.
- Food groups where users share experiences, photos, and recommendations.
- Community interactions to increase user engagement and create a sense of belonging.

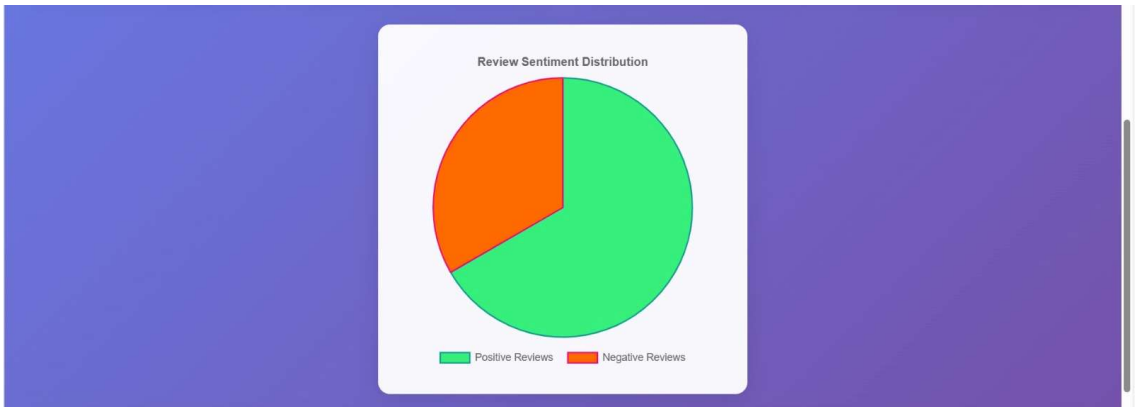
6.8 Cloud-Based Features for Better Scalability

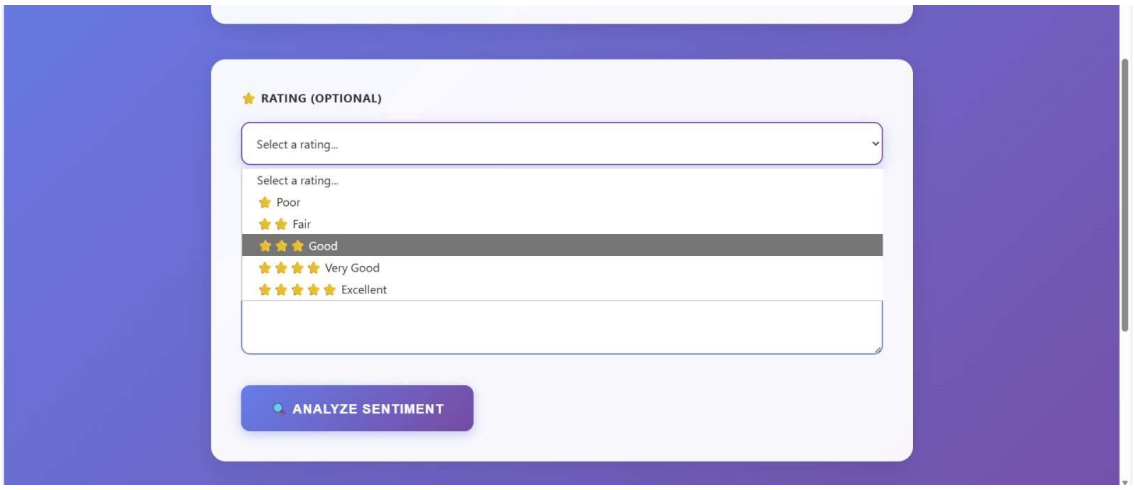
To handle higher traffic and large volumes of review data, cloud services like **AWS** or **Google Cloud Platform (GCP)** could be integrated. Cloud infrastructure would provide scalable storage, serverless functions, and improved performance during peak usage, ensuring smooth operation as the platform grows in popularity.

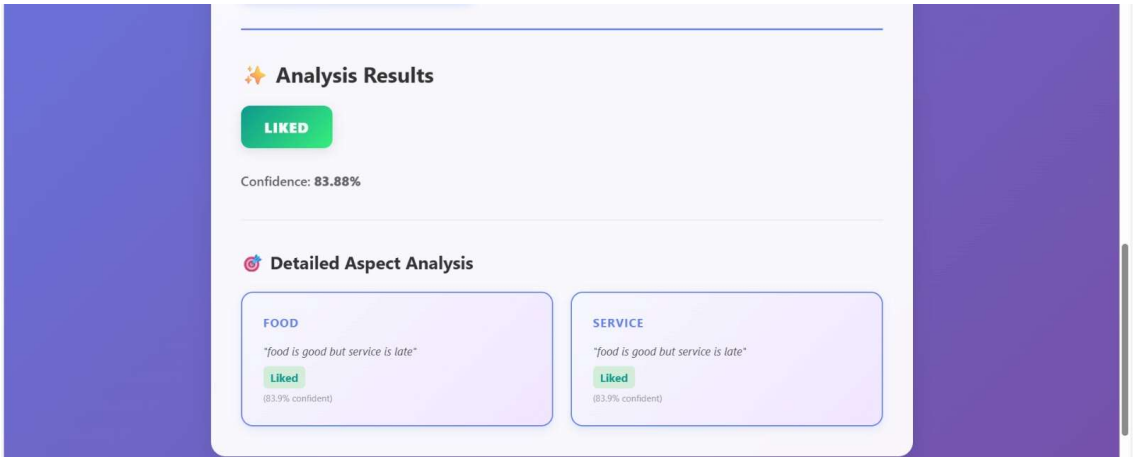
OUTPUT:

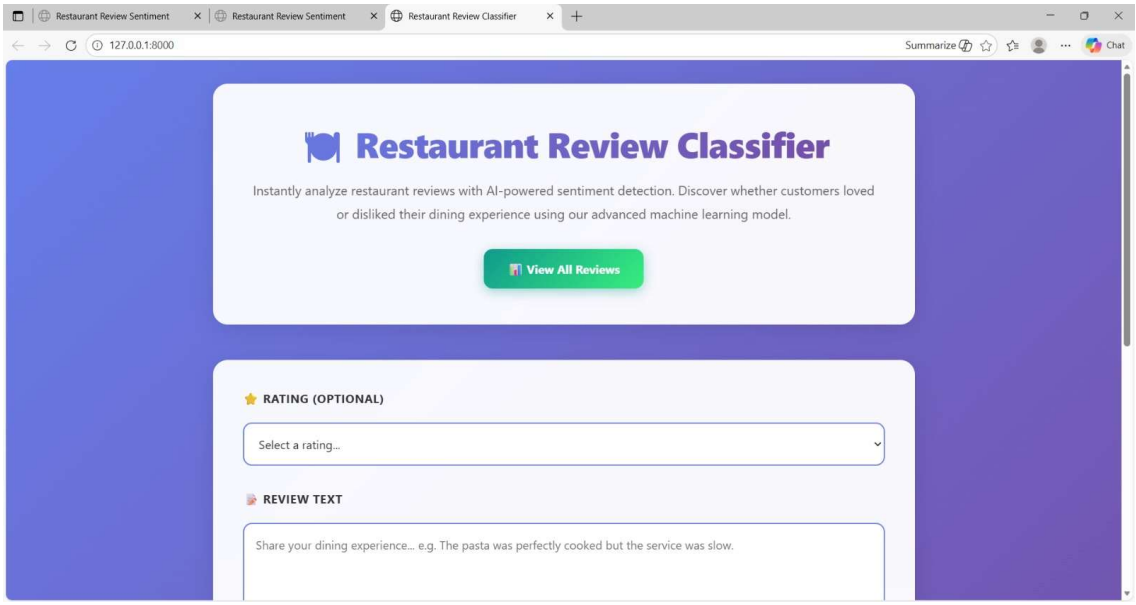

FILTER BY SENTIMENT:
All
CLEAR FILTER
food is good but service is late
LIKED
83.9%
2025-12-04 18:55:10
The rrom was bad
NOT LIKED
93.2%
2025-12-04 17:07:51
The food was good
LIKED
81.0%
2025-12-04 16:58:29


127.0.0.1:8000/dashboard
Summarize
Chat
Reviews Dashboard
View all customer reviews and sentiment analysis
← Back to Classifier
TOTAL REVIEWS
3
POSITIVE REVIEWS
2
66.7%
NEGATIVE REVIEWS
1
33.3%
AVG. CONFIDENCE
86.0%


Review Sentiment Distribution
Positive Reviews
Negative Reviews


RATING (OPTIONAL)
Select a rating...
Select a rating...
Poor
Fair
Good
Very Good
Excellent
ANALYZE SENTIMENT


Analysis Results
LIKED
Confidence: 83.88%
Detailed Aspect Analysis
FOOD
"food is good but service is late"
Liked
(83.9% confident)
SERVICE
"food is good but service is late"
Liked
(83.9% confident)


Restaurant Review Sentiment
Restaurant Review Sentiment
Restaurant Review Classifier
127.0.0.1:8000
Summarize
Chat
Restaurant Review Classifier
Instantly analyze restaurant reviews with AI-powered sentiment detection. Discover whether customers loved or disliked their dining experience using our advanced machine learning model.
View All Reviews
RATING (OPTIONAL)
Select a rating...
REVIEW TEXT
Share your dining experience... e.g. The pasta was perfectly cooked but the service was slow.

7. References

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– Reference for classification concepts used in the Review Classification Module.

2. Jurafsky, D., & Martin, J. H. (2020). *Speech and Language Processing (3rd Ed.)*.
– Standard reference for NLP techniques such as tokenization, stemming, TF-IDF.

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4. Pedregosa, F. et al. (2011). *Scikit-learn: Machine Learning in Python*.
– Reference for using ML libraries like Logistic Regression, SVM, Naïve Bayes.

5. Bird, S., Klein, E., & Loper, E. (2009). *Natural Language Processing with Python*. O'Reilly.
– Reference for text preprocessing, stopwords removal, NLP pipeline.